DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claim 5-8 rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,964,397 to Purcell et al. in view of NO 63947 to Cappelen and US 4,502,395 to Barnett.

<u>In reference to claim 5</u>

Purcell discloses an afterburner device (intermediate wall member 40 which is installed into the firebox 22) supplying fresh, heated air to an upper zone (openings 80 deliver air to the upper zone of 22) of a combustion chamber (22) in an existing traditional stove (Purcell teaches installing the afterburner in an existing fireplace or stove, Col. 3 lines 10-18), the afterburner device comprising: a plate (72, see Fig. 5).

Purcell does not teach a substantially flat plate (72, see Fig. 5) assembly having a fold along each edge of the plate assembly, wherein the plate assembly is configured to form a chamber when installed on the inner side of a side or rear wall of the existing traditional stove.

Cappelen teaches a device that is folded to form a chamber when installed on the inner side of a side or rear wall of an existing traditional stove (see Fig. 1, 2 and 3 of Cappelen where chamber 16 is formed by a folded plate) in which the flow canal is created between the folded plate (folded plate at 15 and the rear wall at 7 form the flow canal as can be seen in Fig. 1 of Cappelen) and a wall of the existing stove. The plate 15 of Cappelen is substantially flat and the plate 15 is folded along each edge as can be seen in Fig. 1 and 2.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Purcell with Cappelen for the purpose of integrating the afterburning device on a side wall of an existing stove. Cappelen teaches that it is well known to someone of ordinary skill in the art to construct an afterburner device for a stove out of a front plate and a rear wall of the stove. It would have been obvious to use the rear wall of the stove as the back wall of the afterburner because it would minimize the complexity of the device and reduce the cost by using less material to construct the afterburner.

Purcell discloses that 40 has a chamber (air space 74, Fig. 5). Purcell does not teach that the existing traditional stove (20) is provided with at least one secondary air

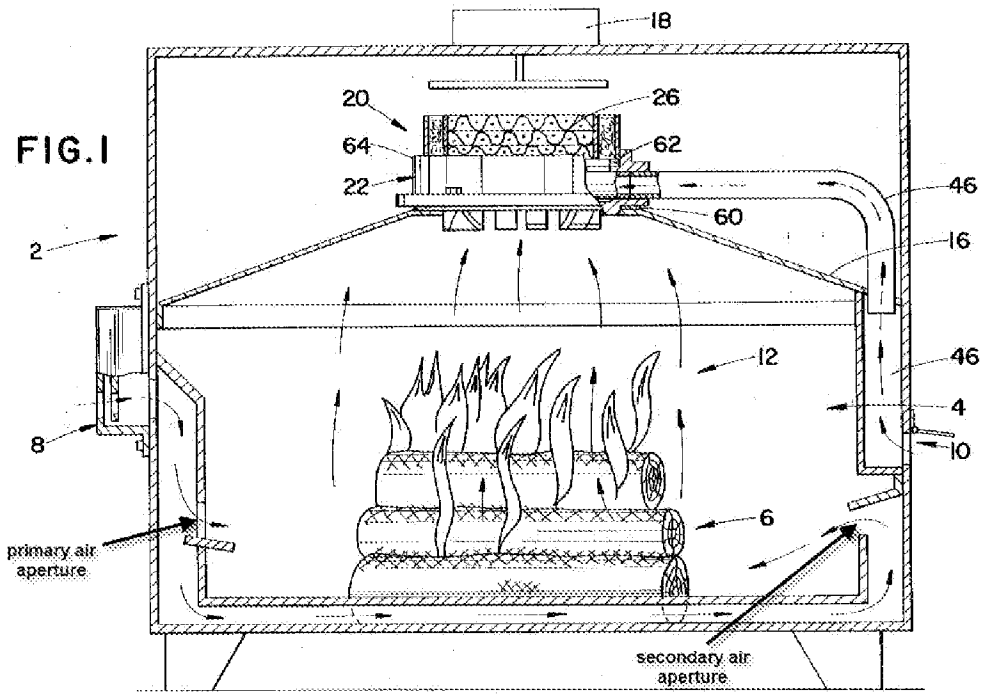
aperture providing communication between ambient air and the chamber near the bottom of said chamber.

Barnett teaches a combustion chamber that as at least one secondary air aperture (secondary air aperture, see annotated Fig. 1 below) providing communication between ambient air (ambient air enters at 8 and is introduced through the secondary air aperture of Barnett substantially towards the bottom of the chamber) and the chamber near the bottom of said chamber.

Purcell teaches that the plate assembly is provided with at least one first hole (openings 76 which are in communication with 22) in communication with said combustion chamber (22) near the bottom of said chamber (the holes 76 are located towards the bottom of the chamber) and wherein the plate assembly includes a first plate and a second plate (see Fig. 8 where Purcell shows a first plate at 84 and a second plate at 86), the first plate overlaps a portion of the second plate (84 overlaps a portion of 86).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Purcell with Barnet for the purpose of introducing a second stream of air so that more air could be delivered through holes 76 of Purcell. All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

FIG. 1



In reference to claim 6

Purcell in view of Barnett discloses the afterburner device according to claim 5, wherein the plate assembly has at least one second hole (see Fig. 4 where there are six holes 80 in the plate 40A) in communication with said upper zone (when installed in a stove, 40A would be capable of delivering air to the upper zone of the stoves combustion chamber) of the combustion chamber near the top of said chamber, whereby air drawn in through the at least one secondary air aperture is pre-heated while rising up behind the plate assembly (when air enters holes 76 from behind the plate, see Fig. 5, the air would inherently preheat due to the fact that 40A is hot and in close proximity to primary combustion in the stove) within said chamber, and is expelled through the at least one second hole (air exits holes 80 see Fig. 4) into the upper zone

of the stove's combustion chamber (see Fig. 2 where 40 is shown installed in a stove, based on Fig. 2, air would be delivered to the upper zone of the combustion chamber).

In reference to claim 8

Purcell in view of Barnett discloses the afterburner device according to claim 5, wherein the first plate (84) and the second plate (86) of the plate assembly (see Fig. 8) can be mutually displaced to provide an adjustable dimension in a lateral direction (90 and 94) when installed, for adaptation to stoves of different sizes (Col. 5 lines 56-68 and Col. 6 lines 1-10).

2. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Purcell in view of Barnett and in further view of NO 63947 to Cappelen (Cappelen).

In Reference to Claim 7

Purcell in view of Barnett the afterburner device according to claim 5, but does not teach that at least one first hole establishes and maintains a pilot flame.

Cappelen teaches a plate (15) that is provided with holes (18) near a folded end of a plate (Fig. 5) where the holes (18) are arranged towards the bottom edge when installed (see Fig. 3) in order to sustain combustion over the furnace chamber's entire length (see Cappelen translation page 4, third paragraph).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate the holes (18) of Cappelen arranged towards the bottom edge of the plate of Purcell for the purpose of sustaining combustion over the furnace chamber's entire length as explicitly taught by Cappelen. Since the holes would

be positioned in the same location as applicant's, they would inherently establish and maintain a pilot flame.

3. Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Purcell in view of Cappelen.

In Reference to Claim 9

Purcell discloses a method of placing an afterburner device in an existing stove (Purcell shows an afterburner apparatus in Fig. 8 that is designed to be fitted into preexisting stoves, Col. 3 lines 10-14) for supplying fresh heated air (40 moves heated air from the back of the firebox to the top region of the combustion chamber for the purpose of secondary combustion) into a combustion chamber (combustion chamber at 22, Fig. 2) of the existing stove, the method comprising: installing a folded plate (Purcell shows installing two folded plates in an existing stove, see Fig. 2 and 8).

Purcell does not teach that the folded plate is installed into the existing stove such that a flow canal is created between the folded plate and a wall of the existing stove.

Cappelen teaches a device that is folded to form a chamber when installed on the inner side of a side or rear wall of an existing traditional stove (see Fig. 1, 2 and 3 of Cappelen where chamber 16 is formed by a folded plate) in which the flow canal is created between the folded plate (folded plate at 15 and the rear wall at 7 form the flow canal as can be seen in Fig. 1 of Cappelen) and a wall of the existing stove.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Purcell with Cappelen for the purpose of

integrating the afterburning device on a side wall of an existing stove. Cappelen teaches that it is well known to someone of ordinary skill in the art to construct an afterburner device for a stove out of a front plate and a rear wall of the stove. It would have been obvious to use the rear wall of the stove as the back wall of the afterburner because it would minimize the complexity of the device and reduce the cost by using less material to construct the afterburner.

Purcell discloses using another back plate to form the afterburner device. Purcell discloses an inlet air pathway (air space 74, Fig. 5) by forming a hole (Purcell shows holes 76 in the back side of 40 and holes 80, which deliver air for secondary combustion). Purcell does not teach forming a hole or a slit in the wall of the existing stove.

Purcell discloses wherein the inlet air pathway (holes 76) is connected to primary airflow outlets (holes 80) in the folded plate (40) via the flow canal (74) to allow air from an the rear of a firebox of the existing stove to circulate into the combustion chamber via the inlet air pathway, the flow canal and the primary airflow outlets (40 delivers air from the back of the firebox to the top region of the combustion chamber for the purpose of secondary combustion).

Purcell does not teach that the secondary combustion air is taken from an exterior region of the existing stove.

Cappelen teaches a valving means (20, Fig. 1) that takes secondary combustion air from the outside environment to the afterburner device. Cappelen also teaches a hole at 17 where the secondary combustion air enters the afterburner device.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Purcell with Cappelen for the purpose of delivering secondary combustion air to the retro-fitted afterburner device of Purcell. It is well known to deliver secondary combustion air from outside the stove for use in secondary combustion. It would have been known to someone of ordinary skill in the art that using combustion air from inside the combustion chamber would not be as efficient as delivering fresh air from the outside environment, because the air inside the oven would be hotter and less dense and would also contain some products of combustion. Therefore, it would have been obvious to combine Purcell with Cappelen for the purpose of delivering outside secondary combustion air to the afterburner to increase the combustion efficiency.

In Reference to Claim 10

Purcell in view of Cappelen discloses the method of claim 9, further comprising creating a secondary airflow outlet (18, Fig. 1, Cappelen) by forming a hole in a lower portion of the folded plate.

In Reference to Claim 11

Purcell in view of Cappelen discloses the method of claim 10, wherein the hole for the secondary airflow outlet (18, Cappelen) is configured to allow airflow into the combustion chamber in order to establish and maintain a pilot flame (holes 18 maintain a pilot light, see Cappelen translation page 4, third paragraph).

In Reference to Claim 12

Purcell in view of Cappelen discloses the method of claim 9, wherein the

circulated air is heated as the air travels through the flow canal (air enters the flow channel 74 and rises due to the heat of the apparatus, then air exits out of holes 80, see Purcell Fig. 2 and 5).

In Reference to Claim 13

Purcell in view of Cappelen discloses the method of claim 9, wherein the inlet air pathway (inlet holes 76, Fig. 4, Purcell) is at a lower end of the flow canal and the primary airflow outlets are at an upper end of the flow canal (outlet holes 80, Fig. 4, Purcell).

In Reference to Claim 14

Purcell in view of Cappelen discloses the method of claim 9, wherein the folded plate comprises a first plate that overlaps a second plate (Purcell discloses multiple folded plates in Fig. 8 in which the plates are adjustable to fit into a preexisting stove, see numerals 90, 92, 94 and 96).

In Reference to Claim 15

Purcell in view of Cappelen discloses the method of claim 14, further comprising adjusting a width (Fig. 8 of Purcell shows adjusting the width of the afterburner) of the folded plate by sliding the first plate over the second plate (the first plate at 84 moves relative to the second plate at 86, see Fig. 8), wherein the width of the folded plate is adjusted prior to installing the folded plate in the existing stove (the afterburner of Purcell is capable of being adjusted before it is installed in the existing stove).

In Reference to Claim 16

Purcell discloses a method of circulating fresh heated air into a combustion (see combustion chamber at 22, Fig. 2) chamber of an existing stove (20), the combustion chamber is enclosed by a first wall, a second wall, a third wall and a fourth wall (Purcell discloses an open fireplace with 3 walls defining the combustion chamber. Purcell does teach that the afterburner device can be installed into a stove, which typically has 4 walls defining a combustion chamber). Purcell does not teach a fourth wall closing the combustion chamber.

Cappelen teaches an afterburner device for a furnace that has a combustion chamber which has four walls defining the chamber (see Fig. 2).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Purcell with Cappelen for the purpose of installing the afterburner device of Purcell in an existing stove that has four walls defining the combustion chamber. Clearly, stoves or furnaces with four walls defining a combustion chamber are well known to someone of ordinary skill in the art. Purcell even mentions in Col. 3 lines 10-18 that the apparatus as shown in Fig. 2 is adapted to be installed into existing fireplaces and stoves. Therefore, it would have been obvious to combine Purcell with Cappelen for the purpose of installing the afterburner of Purcell into a stove with four walls.

Purcell discloses the method comprising: providing the existing stove (Purcell shows installing the afterburner device in a fireplace and a stove, Fig. 2 and Col. 3 lines 10-18); forming an airflow chamber (74, Fig. 5). Purcell does not teach forming an

airflow chamber on an interior portion of the existing stove by attaching a folded plate to the first wall of the existing stove.

Cappelen teaches a device that is folded to form a chamber when installed on the inner side of a side or rear wall of an existing traditional stove (see Fig. 1, 2 and 3 of Cappelen where chamber 16 is formed by a folded plate) in which the flow canal is created between the folded plate (folded plate at 15 and the rear wall at 7 form the flow canal as can be seen in Fig. 1 of Cappelen) and a wall (the first wall is the back wall of Cappelen) of the existing stove.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Purcell with Cappelen for the purpose of integrating the afterburning device on a side wall of an existing stove. Cappelen teaches that it is well known to someone of ordinary skill in the art to construct an afterburner device for a stove out of a front plate and a rear wall of the stove. It would have been obvious to use the rear wall of the stove as the back wall of the afterburner because it would minimize the complexity of the device and reduce the cost by using less material to construct the afterburner.

Purcell discloses wherein the folded plate is spaced from the first wall (the front plate of Purcell is spaced away from the back wall of the combustion chamber, see 40A, Fig. 5 and Fig. 2) and wherein the airflow chamber includes at least one outlet hole at an upper end (holes 80, Fig. 5) of the airflow chamber; forming at least one inlet hole at a lower end (inlet holes 76) of the airflow chamber. Purcell does not teach wherein the inlet hole is formed in the first wall of the existing stove.

Cappelen teaches an inlet hole (17, Fig. 2) that is formed in the first wall of the existing stove, see above.

Purcell discloses allowing air to circulate into the combustion airflow chamber (air enters 74 through holes 76, rises due to heat and exits through holes 80) along an airflow pathway defined by the inlet hole (76), the airflow chamber and the outlet hole (80).

In Reference to Claim 17

Purcell in view of Cappelen discloses the method of claim 16, further comprising heating the circulated air (air enters the flow channel 74 and rises due to the heat of the apparatus, then air exits out of holes 80, see Purcell Fig. 2 and 5) as the air travels along the airflow pathway.

In Reference to Claim 18

Purcell in view of Cappelen discloses the method of claim 16, further comprising forming a second outlet hole (18, Fig. 1, Cappelen) at the lower end of the airflow chamber, wherein the second outlet hole is formed at a lower end of the folded plate (18 is located at the lower end of plate 15 as shown in Fig. 3).

In Reference to Claim 19

Purcell in view of Cappelen discloses the method of claim 18, wherein the second outlet hole(18, Cappelen) is configured to allow airflow into the combustion chamber in order to establish and maintain a pilot flame (holes 18 maintain a pilot light, see Cappelen translation page 4, third paragraph).

In Reference to Claim 20

Purcell in view of Cappelen discloses the method of claim 16, wherein the airflow chamber is formed on a side of the existing stove (Cappelen teaches the afterburner device installed on a side of an existing stove, see plate 15 and the side of the stove at 7, Fig. 1).

Response to Arguments

3. Applicant's arguments filed 12/14/2009 have been fully considered but they are not persuasive.

4. In response to applicant's argument that Purcell is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Purcell teaches an aftermarket afterburner which can be installed in a pre-existing fireplaces but also in "certain stoves and in other heating devices to increase there operating efficiency" (Col. 3 lines 10-13). The applicant is claiming an afterburner device for a combustion chamber and since gas or solid fuel fired stoves and fireplaces have combustion chambers, Purcell should be considered analogous art in this case. Furthermore, combining Purcell with Cappelen would not require an inventive step since Purcell mentions that his invention could be installed into a pre-existing stove.

5. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the motivation to combine was gleaned from Purcell, who teaches that it is well known to someone of ordinary skill in the art to install and afterburner in a pre-existing stove.

6. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine was derived from what is generally known to one of ordinary skill in the art. Integrating the afterburner of Purcell into the back wall of the combustion chamber would reduce materials and overall cost of the apparatus.

7. The applicant further argues that it would not have been obvious to one of ordinary skill in the art to form a secondary aperture in the wall of an existing stove. The

examiner disagrees since afterburners which are integrated in a wall of an existing stove which facilitate the delivery of secondary ambient air to the combustion chamber for the purpose of secondary burning of the products of combustion is well known in the art and has been shown by Cappelen. The inventive concept of installing an aftermarket afterburner is also clearly known to someone of ordinary skill in the art and therefore it would have been obvious to modify Purcell in order to be compatible with different stove types.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL A. BERNSTEIN whose telephone number is (571)270-5803. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00 PM EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Rinehart can be reached on 571-272-4881. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DAB

/Kenneth B Rinehart/

Supervisory Patent Examiner, Art Unit 3743